OCTOBER 1960

Bulletin

NATIONAL TUBERCULOSIS ASSOCIATION

Stevan Dohanos adds a brush used by Norman Rockwell to his prized collection.

featuring

STEVAN DOHANOS, 1960 Christmas Seal Chairman

NATIONAL
TUBERCULOSIS
ASSOCIATION

Bulletin

SOL S. LIFSON
Editorial Director

LUCILLE FISHER
Managing Editor

VOL. 46 NO. 9

Published monthly except August at 404 North Wesley Ave., Mount Morris, Ill., by the National Tuberculosis Association for persons interested in public health and administrative aspects of tuberculosis and respiratory disease control, and made possible by Christmas Seal contributions. The editors welcome articles for possible publication. If any article deals with a subject on which there may be differences of opinion, the BULLETIN will be glad to consider presentation of varying opinions in the same or subsequent issues. The opinions expressed in signed articles are the authors' and do not necessarily reflect those of the National Tuberculosis Association. Editorial Office: 1790 Broadway, New York 19, N.Y. Second class postage paid at Mount Morris, Ill.

A Personal Crusade Against TB

TB can strike anyone, anytime, anywhere. I know because I was stricken with tuberculosis in 1932, but recovered. Others close to me were not as fortunate. I watched my younger brother fight this disease for five years and finally die of it. My younger sister also died of TB. One of my wife's brothers lost his battle with tuberculosis, and another brother spent three years in a TB sanatorium. Later, I suffered a serious relapse and was confined to a TB sanatorium for eleven months.

Somehow, these eleven months were the turning point in my life, and I resolved that when I recovered, I would conduct a personal crusade against TB with the only weapon I possess—my art.

I was lucky to recover from TB and to have the opportunity of wielding my brush against the nation's number one infectious killer. But thousands like my brother and sister and my wife's brother die of tuberculosis every year. This is why I welcome the opportunity of serving as the 1960 Honorary Christmas Seal Chairman.

We still face a clear and present danger. The TB experts say it's now or never. Tuberculosis must be eradicated before the TB germ becomes resistant to the drugs now used to treat it.

We who have had tuberculosis deeply appreciate the value of Christmas Seals. If it were not for Seals, perhaps I might not have the opportunity of being here to join with you in this crusade. All of you—board members, committee members, staff members and volunteers – are contributing something of great value that cannot be measured in dollars.

Through your efforts you will enable TB associations to fight this terrible disease in their communities—your communities. But the time is now. I am proud to do whatever I can to make the 1960 Campaign a success. I hope to prove that the brush—like the pen—is a mighty weapon in the battle to wipe out TB.

Steven Dohanos

Stevan Dohanos—National Honorary Christmas Seal Chairman

■ *STEVAN DOHANOS, distinguished artist, illustrator, teacher and recovered TB patient, has been named 1960 National Honorary Christmas Seal Chairman.*

The announcement comes from Herbert C. DeYoung, president of the National Tuberculosis Association, who describes Dohanos as a public figure "who has given generously of his time and talents to fight TB and other diseases for a number of years, certainly without the public recognition he deserves."

Dohanos has, indeed, worked closely with TB associations. Among his contributions are the 1941 Christmas Seal, materials for a nurses' recruiting campaign sponsored by the Connecticut association, and his now-famous series of X-ray posters for NTA.

The artist knows about TB firsthand. He was stricken with the disease in 1932, recovered, and suffered a relapse in 1941. TB claimed the lives of a younger brother, Bert, and younger sister, Irene. His wife's brother, Valentine, was also a victim.

The name Dohanos has become synonomous with many familiar aspects of the American scene, chiefly through his covers for The Saturday Evening Post. He has done more than 125. In addition, his signature has appeared on scores of magazine illustrations and national advertisements. His murals decorate U. S. government buildings in Elkins, West Virginia; West Palm Beach, Florida, and Charlotte Amalie, Virgin Islands. He has designed three U. S. postage stamps: the NATO Tenth Anniversary commemorative, the 49-Star Flag and the 50-Star Flag. Art students everywhere know him as a member of the founding faculty of the Famous Artists Schools, the world's largest art school. Physicians enjoy his illustrations on the cover of Medical Times.

As 1960 National Honorary Chairman, Dohanos will participate in several projects designed to call attention to this year's campaign. He is supervising the Art Against TB Poster Project and has recorded TV and radio spot announcements. He also will appear on network TV and radio shows and will be the subject of newspaper and magazine interviews. In addition, he will work with national art groups to stimulate greater interest than ever in Christmas Seals and the war against TB. «

▲ A tireless and energetic worker, Steve takes time out for lunch, brought to his studio by Mrs. Dohanos.

▲ An avid collector of antiques, he delights in a reproduction of an old post of Hungarian origin, which is used for drying pots and vessels.

▲ AND KEEP EVERYONE SAFE was created for NTA by Dohanos to emphasize the need for chest X-rays.

The brass knocker on the door to Stevan Dohano's studio is a horseshoe. Curiously enough, this symbol of Lady Luck seemed to have abandoned him when he was first stricken with tuberculosis in 1932 and again when he suffered a recurrence in 1941. The tragedy of tuberculosis has also visited his family. It has claimed the lives of a younger brother and sister and his wife's brother. But Stevan Dohanos won his personal battle against TB.

During his long illness, he determined that he would use his talented brush as a weapon to crusade against this killer when he got well. Moreover, he has championed a host of other national and community causes.

"Art is the one, universal means of communication," says Mr. Dohanos. "As a visual means, it is a most powerful weapon. When you contribute your art, you contribute something of yourself. Each of us owes a helping hand to his fellow men."

As honorary chairman of the 1960 Christmas Seal Campaign, Stevan Dohanos is helping his fellow men by fighting an enemy which he has met at close quarters—tuberculosis.

◀ Still a boy at heart, Steve gives his young son, Anthony, a hefty send-off in his elegant 'Daimler IV'.

STEVAN DOHANOS

Artist—Crusader

▲ Mr. Dohanos' studio reflects his own meticulous approach to his work. Here his efficiency, passion for detail, and tremendous versatility and talent are apparent.

*Courtesy of *The Saturday Evening Post*
© 1945 The Curtis Publishing Company

*Courtesy of *The Saturday Evening Post*
© 1949 The Curtis Publishing Company

▲ As a *Saturday Evening Post** cover illustrator, Stevan Dohanos is known and loved all over America.

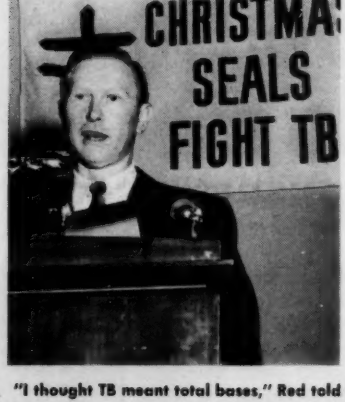
▶ Steve tackles widely different art assignments, as shown by these two commemorative stamps commissioned by the U. S. Government.

◀ To shed light on disease—that was the idea behind his 1941 Christmas Seal.

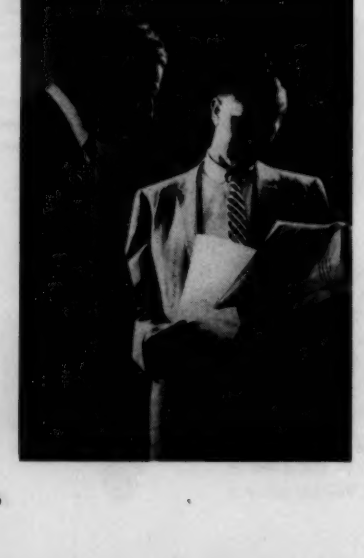
RED SCHOENDIENST, First National Chairman, Was an Inspiration

▲ Dr. H. McLeod Riggins, 1959-60 NTA president, presents Red with a medallion during St. Louis ceremonies in appreciation of his work as National Honorary Chairman. To the great star's left are Dr. William Werner, the physician who diagnosed and treated his illness, and Dr. Joseph Lucida, who performed surgery on Red.

▲ The Schoendiensts arrive in Washington, D.C. to present '59 Seals to Mrs. Eisenhower. Red is shown with wife, Mary, and daughters, Cathleen and Colleen.



▲ "I thought TB meant total bases," Red told the Conference for Executives of Constituent Associations in January. His address received standing ovation.



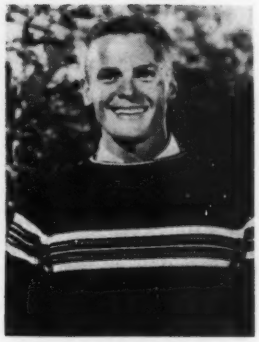
◀ Red and Charles Collingwood rehearse for the highly successful CBS "Conquest" program. This was one of many network TV shows on which he appeared.

RED SCHOENDIENST HAS TB! Newspaper headlines and TV and radio broadcasts flashed this news across the nation in the fall of 1958. One year later, the sensational second baseman of the Milwaukee Braves and one of baseball's all-time greats was a guest in the White House. Completely recovered from tuberculosis, he was there in his role of national honorary Christmas Seal chairman to present the first '59 Seals to the First Lady, Mrs. Dwight D. Eisenhower.

Just as the country was grieved and shocked by news of his illness a year earlier, it rejoiced at his recovery in 1959. Red's willingness to serve as the first national honorary chairman in the NTA's history was an inspiration to TB workers. Newspapers, magazines, TV and radio stations and the public—all were similarly inspired by the man who wanted to remind the world that TB can and does strike anyone at any time.

Red tackled his assignment with the same zest that characterizes his performance on the baseball diamond. The photos on this page show a few of the many activities in which he participated.

★ Bobby Darin



★ Tab Hunter

★ Tony Martin

★ Rock Hudson

★ Harry Belafonte

★ Connie Francis

A Shower of Stars Promote Christmas Seals

■ Snatched between night club shows or while flying coast to coast for movie or television commitments—some of the brightest stars in the entertainment world have donated their valuable time to make transcriptions and films for the 1960 Christmas Seal Campaign.

Many gave time when it was extremely difficult or just plain inconvenient to do so. For instance, Charlton Heston was in the midst of important negotiating committee meetings during the Screen Actors Guild strike, yet he managed to get away for a while to do a TV spot.

Bobby Darin, a new singing personality, sandwiched a fifteen-minute radio transcription in between acts at the Copacabana night club. Tony Martin went back to NBC at an early hour after a late night performance. Harry Belafonte squeezed in time at the Palace in New York.

The names of the stars who are helping to publicize the Christmas Seal Campaign this year are on the marquees that attract long lines of theater-goers. The three entertainers who star in one-minute TV spots are no less than: the Academy Award winner for best actor—Charlton Heston; a favorite singer who has become a classic—Jo Stafford; and the popular young star who has his own show on TV this fall—Tab Hunter.

Add to this group Hollywood's number one box office attraction, Rock Hudson, who made this year's movie trailer—together with all the other famous recording artists and stars who made radio transcriptions and spot announcements—and you have a glittering array of entertainers, all helping to remind the public that TB is the leading infective killer and that the way to support the fight is to buy Christmas Seals.

★ Charlton Heston

★ Jo Stafford

XII Pan American Tuberculosis Congress

■ RELATIONSHIPS WERE CEMENTED between Latin American and the U.S. medical leaders in the tuberculosis field at a meeting held recently in Brazil. Six members of the American Thoracic Society were invited to attend the XII Pan American Tuberculosis Congress in the city of Salvador, Brazil, from July 10-16. The congress took place under the auspices of the Latin-American Union of Tuberculosis Societies.

The six North American guests were happy to meet Latin American leaders in the field of chest disease and to see at first hand the progress being made in the conquest of tuberculosis and other lung diseases in the South American countries. The North American representatives gave scientific papers and took part in the panel discussions.

The ATS representatives who attended were: Dr. James E. Perkins, NTA managing director; Dr. James W. Raleigh, ATS medical director; Dr. William B. Tucker, ATS president; Dr. Robert E. Ebert, ATS president-elect, professor of medicine and chairman of the Department of Medicine at Western Reserve University, Cleveland, Ohio; Dr. Oscar Auerbach, chief, laboratory service, Veterans Administration Hospital, East Orange, N.J., an outstanding research worker in the field of lung cancer as well as in tuberculosis; and Dr. Dieter Koch-Weser, assistant professor of medicine at Western Reserve University and a member of the Editorial Board of *The American Review of Respiratory Diseases.*

American delegates waiting to greet the governor of Bahia, Brazil. Left to right: Dr. Oscar Auerbach, Dr. Dieter Koch-Weser, Dr. William B. Tucker, Dr. James Perkins and Dr. James W. Raleigh. The sixth U. S. delegate, Dr. Robert H. Ebert, was not present at the moment.

A luncheon for eleven corresponding members of ATS present as representatives of various South American countries was held in conjunction with the congress. »

NTA Board Committees

. . . their purpose and functions

Program and Budget

■ AT THIS MOMENT AT THE NTA, a second draft of a 175-page program and budget for 1961-62 is being prepared for the Board's Program and Budget Committee.

In developing NTA plans, NTA staff and the Program and Budget Committee work closely together. During the summer months, each division prepares a first draft of its objectives, the methods it proposes to use to achieve them, and estimates of staff and funds required. These statements are carefully reviewed by the Executive Office.

Then, in November, the Program and Budget Committee reviews the overall picture of NTA finances and program and discusses with each division director the details of the divisional program and the requested appropriations. The committee finally agrees on a preliminary budget to be submitted to the Board of Directors in January. Further revision is made by the Committee, as needed, for final approval by the Board in May.

Each year, the Committee is faced with a dilemma of certain conflicting policies established by the Board of Directors. It is established policy that the program for tuberculosis control shall be intensified and that the NTA shall expand its program in the field of respiratory diseases. It is also established policy that NTA reserves shall be not less than 50 per cent of one year's operating budget and shall work towards 100 per cent of operating use. And, in recent years, the staff has always presented a preliminary budget which has been well in excess of the anticipated income.

The NTA share of the Christmas Seal income has increased each year by only a very small percentage. The Program and Budget Committee thus faces a difficult problem in reviewing carefully all aspects of program, expenditures for program, and the possible methods of financing this program.

For 1960-61, the Committee and the Board approved an NTA budget of $1,890,939. After allowing for estimated underexpenditures and support of special items from bequest funds, this budget still left an estimated overexpenditure of $42,138 for the current fiscal year. The Program and Budget Committee for 1961-62 probably will face a similar challenge.

The members of the current Program and Budget Committee are: George W. Dixon, Jr., chairman; John L. Gompertz, M.D., vice-chairman; J. Douglas Colman, Norris F. Crosby, Herbert C. De Young, NTA president; Robert Ebert, M.D., ATS president-elect; Jules F. Schneider; James Sterner, M.D.; Joseph Stocklen, M.D.; William B. Tucker, M.D., ATS president; H. Stuart Willis, M.D., NTA president-elect; Bernard Hughes, Ed.D., NCTW president-elect; and C. Scott Venable, NCTW president. »

WHAT are the FACTS on TEEN-AGE SMOKING?

Lack of information about smoking among teen-age students led V. J. Sallak to do a study in Erie County public schools. Here are the highlights of one of the few authoritative studies on the subject.

V. J. Sallak, Ed.D.

FOLLOWING THE NATIONAL TUBERCULOSIS ASSOCIATION BOARD OF DIRECTORS' firm policy statement on the danger of cigarette smoking to health, increasing numbers of tuberculosis associations have become interested in smoking habits of teenagers.

It is generally agreed that teenagers are the ones to try to hold back from smoking. A large proportion of adult regular smokers are presumed to have picked up the habit in high school.

The Buffalo and Erie County Tuberculosis and Health Association recently assisted the author in developing a study of the smoking practices of young people in grades seven to twelve. The study was done by means of questionnaires which were handed in unsigned. The group included 2,159 boys and girls—a six per cent sampling of 35,502 junior and senior high school students in twelve public school superintendencies in Erie County (exclusive of parochial and Buffalo public schools).

In New York State, school systems are required by law to teach the effects of tobacco products in the period following the first eight years of schooling. The state syllabus in health and physical education supplies a limited outline of information which teachers may follow or supplement—depending in large part on the interest of the teacher and the requirements of curricula of schools. The intent of the law obviously is to deter students from acquiring the tobacco habit.

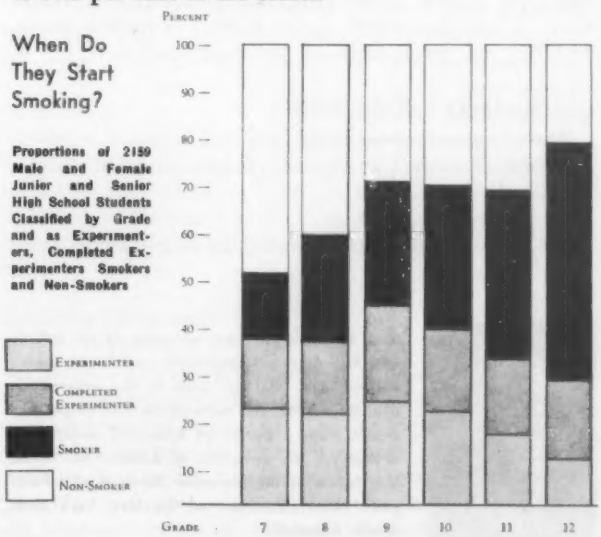
Erie County is a part of the highly industrialized Niagara Frontier, but it also has areas that are distinctly rural.

Four Categories

In this study, four categories of students were established: non-smokers, experimenters, completed experimenters and smokers. *Experimenters* and *completed experimenters* included students who had smoked but who had not smoked as many as five packs of cigarettes, five cigars or five packages of pipe tobacco or more. Students who had smoked as much as this or more were defined as *smokers.* (This latter level has been used in a variety of other studies.) Obviously, the *non-smokers* were those who stated they had not smoked.

Some Findings

It was found that of the boys thirteen years old and younger, 9.3 per cent smoke at home. This proportion increases to 48 per cent in the eighteen-year-old and older groups. Similarly, the proportion of girls who smoke at home increases from 5.5 per cent in the youngest group to 33.9 per cent in the oldest.



Although cigarettes are by far the most popular tobacco product used by junior and senior high school students, cigars and pipe tobacco are used for experimental purposes by large proportions of boys. For a variety of reasons, cigarettes are preferred by continuing smokers.

The Portland, Oregon, study undertaken by the American Cancer Society showed that most senior high school boys and girls prefer filtered cigarettes. In comparison, the Erie County study showed that boys prefer the plain or non-filtered variety, while girls prefer the filtered cigarettes.

In the Erie County study, a statistical relationship between the smoking practices of parents and their school children was clearly established. In other words, the children of parents who smoke, indulge in smoking more frequently than do the children of parents who do not smoke. This agrees with findings in the Portland, Oregon study.

While approximately 25 per cent of all Erie County youths (male and female) become smokers, rural boys and girls do not become smokers as quickly as city youths. While both groups experiment with tobacco products in substantial proportions, the city youth reaches the definition of "smoker" more quickly and more frequently.

Some young people show a substantial history of smoking even at the age of twelve and thirteen. For example, 11.7 per cent of the boys in seventh grade (approximately twelve or thirteen years old) state they have smoked for three or more years. Another 17.3 per cent state they have smoked for one to three years. Another 18.5 per cent state they have smoked for less than one year. Of this age, 47.5 per cent have smoked in seventh grade or earlier.

In answer to the question, "Have you ever smoked?", 69 per cent of the boys in seventh grade state that they have. In the twelfth grade, 87.2 per cent smoke, and approximately 92 per cent of those eighteen years old and over smoke. With girls, the percentage increases from 32.2 in the seventh grade to 69.5 in twelfth grade, and 70.1 for those eighteen years old and over.

Did Students Tell the Truth?

Three separate procedures were undertaken to check the truth of student statements. In one school district, a check on 378 students who had been seen smoking on previous occasions showed that 96.1 per cent told the truth. Identities were protected with anonymity.

Student replies regarding their parents' smoking practices, showed that 71.8 per cent of the fathers smoke; 47 per cent of the mothers smoke. In comparison, a national study undertaken by the U. S. Public Health Service reported that 73 per cent of adult men smoke; of women aged 35-44, 35.6 per cent smoke regularly and 4.4 per cent smoke occasionally.

Student replies were also confirmed by a separate analysis of reports by other students describing the smoking practices of their high school friends.

Recommendations

Changing the smoking habits among junior high school and high school students is a large order. On the basis of the Erie County study, the following recommendations are made:

1. Instruction and guidance for youth should be undertaken in the sixth or seventh grade or both, on the use of tobacco products, particularly cigarettes.

2. Because of the continuous increase in smoking from seventh to twelfth grade, instruction and guidance on the effects of smoking tobacco should be continued throughout the grades.

3. Because the smoking habit in youth is increasing, not declining, current educational procedures regarding smoking should be reviewed so that effective procedures can be maintained or developed to deter the development of the habit.

4. Special consideration should be given to the particular characteristics of each sex. The considerable differences between the smoking practices of each should be recognized.

5. Educational authorities, parent groups and individual parents should plan and undertake programs of action in regard to smoking.

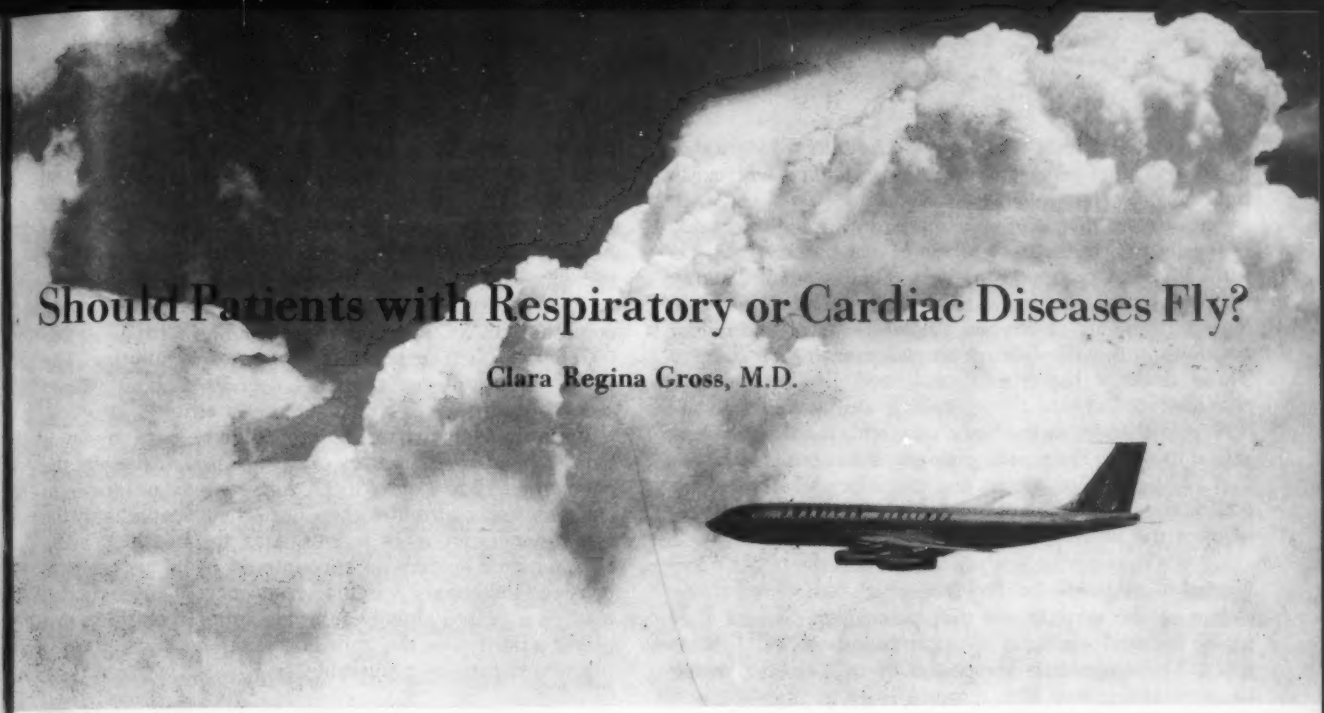
6. School authorities and parental groups should seek to integrate their efforts with community health resource groups of a voluntary and tax-supported nature.

7. School and other authorities should try to gain a more precise understanding of the motives which prompt youthful smoking, and an understanding of forces that will deter or eliminate the desire to participate in this practice.

8. School authorities periodically should review and study smoking practices of junior and senior high school youth to help determine the degree of success achieved in attempting to delay or eliminate the practice of smoking.

9. School authorities should help to evaluate the legal obligations of the school in regard to smoking, and to determine the propriety of existing laws in relation to present circumstances surrounding this problem. Furthermore, they should assist in modifying existing laws and in formulating new laws relating to the functions of schools in connection with youthful smoking practices. ■

V. J. Sallak is executive secretary of the Buffalo and Erie County Tuberculosis and Health Assn., Buffalo, N.Y. He has been in the tuberculosis field since 1942. The material for this article was drawn from a Doctor of Education dissertation written for the University of Buffalo. Dr. Sallak is a fellow of the American Public Health Assn. and 1960-61 president of the New York State Health Association.



Should Patients with Respiratory or Cardiac Diseases Fly?

Clara Regina Gross, M.D.

MRS. F., AGE FORTY-TWO, a vivacious, though easily excitable mother, spent two and a half years in arresting her extensive tuberculosis. She returned to active life again with her husband and ten-year-old son. Then her brother on the west coast became critically ill. Could she fly there from New York immediately?

Her physician handled her question in this way: First, details of the specific flight were ascertained through the airline's medical director and airport manager. Then, the whole situation was reviewed with Mrs. F. and the airline notified. A letter was given to the patient for the captain and the stewardess, stating her problem briefly and requesting oxygen should Mrs. F. experience any shortness of breath, faintness, or any unusual symptoms.

This was Mrs. F's first flight. All went well for several hours, and then suddenly the pressurization system failed at a high altitude. The captain's flight plans were immediately changed, but the patient was in the air several hours before the enforced landing was made midway across the continent.

Mrs. F., unlike the other passengers, remained calm, and was surprised to find she had no untoward effect at all from this experience. She changed planes and continued her flight. At the final destination on the coast, in the midst of pouring rain and mud puddles, Mrs. F. stepped off the plane and dashed to make her next connection (but accidentally left her beautiful shoes in a mud puddle!).

Another patient, Mrs. D., age sixty-four and slightly short of breath from a moderately severe emphysema, had just recovered from a brief bout of bronchopneumonia. She must return to her home abroad as quickly as possible. Could she fly in a jet?

The flight details, including altitude and pressurization, were ascertained; the patient's problems were presented to the medical director, who in turn informed the captain and the stewardess of Mrs. D's possible needs for oxygen. All went well in spite of turbulent weather. The patient experienced no difficulty at all, and felt that air transportation, with its comfort, cleanliness, ease and decreased travel time, was superior to other means of travel.

What is common to these two patients? They both had a pulmonary disease of some extent—but without gross restriction of their ventilation or pulmonary function.

Should Such Patients Fly?

Generally speaking, if one can walk, talk and act normally, he may fly. The hazards of problems such as weather, turbulence and high altitude are all relative. But there are definite modifications to this rule.

The average individual can fly at an altitude of about 5,000 feet without any awareness of the effects of altitude. In order to understand the many problems involved in adaptation to altitude, however, one has to learn certain basic physiological facts. Over a period of many years, a tremendous amount of scientific knowledge on this subject has been accumulated, and experts in aerospace medicine and aviation engineers have incorporated this knowledge into the amazingly safe modern aircraft. The scientific background, put as simply as possible, is as follows:

Scientific Background

Man functions best at the bottom of a large ocean of air which exerts a definite amount of pressure on him. He can function reasonably well even under conditions beyond his normal limitations. During flight, however, the stresses of turbulence, rapid changes in barometric pressure during ascent and descent, oxygen want at high altitudes, extremes in ventilation, temperature or humidity, excessive noise or vibration, or even marked varia-

tions in the stability of the aircraft due to sudden maneuvers, may exceed the customary limits and cause physiological changes.

The stresses that man encounters during flight are due primarily to a reduction in oxygen and barometric pressure. Many years ago, Paul Bert demonstrated that the important physiological variable at high altitude is the lessened amount of oxygen available to the individual because of the *diminished partial pressure* of oxygen. These findings have been confirmed by low-pressure chamber studies and flying at high altitudes. The characteristic changes in the body vary with the rapidity and extent to which the partial pressure of oxygen is reduced, that is, the rate of ascent and the altitude attained, as well as the length of exposure and the physical characteristics of the individual.

Normal Conditions—No Problem

It must be emphasized that passengers are not normally exposed abruptly to altitudes of 10,000 feet or more. There is a suitable period of time during which the airplane passes from ground level to high altitude (at the rate of about 300-500 feet per minute) during which time the passenger can adjust to the changing environment. This adjustment is made easily by most people. Pressurization prevents oxygen deficiency and eliminates the need for oxygen masks for the average healthy passenger.

However, if one were to ascend fairly rapidly in an airplane without pressurization, the physiological effects on the central nervous system by way of the respiratory mechanism would be insidious. This is often overlooked. At first there may be a feeling of well-being, but this stage gradually and unwittingly passes into sensory and mental dullness. When the partial pressure of oxygen is reduced from 160 mm. Hg. at sea level to 100 mm. Hg. at 12,000 ft., the air passenger may be conscious of altered breathing, a more rapid pulse, greater apparent muscular effort in moving, and headaches. When the partial pressure is reduced to 80 mm. at 18,000 feet, the lips and fingernails turn blue. Sensory and mental incapacity may be present, and sleepiness and fainting are common. In spite of obviously foolish reactions, the passenger may feel confident that his mind is clear and judgment sound. The variations in the total atmospheric pressure, partial pressure of oxygen and other physical variables of the atmosphere with altitude are shown in Table A.

The blood oxygen saturation at sea level is 95 per cent; at 10,000 ft., 90 per cent; at 15,000 ft., 80 per cent. While the percentage of oxygen in the air remains the same, there is not enough pressure to drive the oxygen from alveolar air into the lung capillaries. Thus, the lowering of the amount of oxygen in the blood decreases the availability of the oxygen for the tissues. So, in normal persons, rapid ascent to higher altitudes without supplementary oxygen will result in sudden loss of consciousness from cerebral hypoxia. A person exposed to an altitude of 26,000 ft. remains conscious for about 3½ minutes. The period of useful consciousness decreases about twenty seconds with each 1000 ft. increase in altitude.

In individuals whose ability to oxygenate tissue is handicapped by respiratory or cardiovascular disease, the effects of hypoxia or reduced oxygen become apparent at much lower altitudes than in normal people, and the consequences are more serious. Also, the relatively acute hypoxia such as may be encountered in flights tends to increase pulmonary vascular resistance. This increased load on a person already suffering from a condition that places a burden on the right side of the heart could cause the situation to be intolerable.

Few Affected at Lower Altitudes

Very few passengers will be influenced by oxygen want, even without pressurization, at altitudes up to 5,000 or 6,000 feet. The most sensitive psychological tests thus far devised—those relating to light sensitivity—do indicate measurable impairment at about 5,000 feet, but such reactions would not inconvenience passengers.

At altitudes over 9,000 feet, however, symptoms of headache, sluggishness, fatigue, shortness of breath, especially after several hours of exposure, are common. At 12,000 feet, many passengers need supplemental oxygen, and at altitudes of 14,000 feet, oxygen is definitely required by all.

To prevent oxygen deficiency in aircraft that fly at altitudes exceeding 10,000 feet, the cabin is automatically pressurized to well under 8,000 feet. In the jets, generally speaking, the cabin pressures are even lower than this, as can be seen from the following table:

ATMOSPHERE ALTITUDE	CABIN ALTITUDE
40,000	7,500
35,000	5,500
30,000	3,700
25,500	1,400
22,500	Sea Level

When Pressurization Suddenly Changes

Sudden change in the pressurization system, however—for example, an abrupt exposure to 15,000 feet from a cabin pressure of 8,000 feet—might be very serious in a person with a pulmonary lesion or cardiac disease. The chief difficulty arises from the sudden explosive decompression and the very rapid onset of anoxia, or oxygen deficiency. Therefore, aircrafts today are equipped with demand oxygen masks available to all passengers within seconds after an explosive decompression, and individual portable tanked oxygen is available for pulmonary or cardiac patients who need it in certain circumstances.

Dr. Clara Regina Gross is associate clinical professor of medicine, College of Physicians and Surgeons, Columbia University, New York, and an authority on medicine in relation to flying. A diplomate of the American Board of Preventive Medicine (in Aviation), she is a Medical Examiner for the U. S. Federal Aviation Administration. In addition, she is consultant to the U.S. Veterans Administration Hospital, Manhattan, New York City, and a member of the Board of Directors of the New York Tuberculosis and Health Association.

In the two passengers that were mentioned, the pulmonary function of each was quite sufficient to tolerate the changed situation they met. But in the event that oxygen might be needed for a long period of time for a patient with cardiac or pulmonary disease, it is well to make arrangements for this prior to flight, through the medical director of the airline or the district airport manager.

Motion Sickness and Other Effects of Flight

Although anoxia (oxygen deficiency) is the most threatening event in aerial flight, there are other conditions which may effect health or comfort. The familiar condition of motion sickness may increase the hazard of anoxia. The large airline companies list airsickness as the major problem at all times of the year. It accounts for 30 to 75 per cent of the total number of passenger discomforts reported. No normal person is immune to motion sickness, but only about 10 per cent of all adults are highly susceptible, and it rarely becomes severe enough to threaten health.

Brief mention should also be made of other situations that cause discomfort in flight. Sinus or ear distress may occur through rapid barometric pressure changes. Any gas-containing structure (stomach, intestine, pneumothorax space) will expand as pressure falls, so that at 18,000 feet the volume is double that at sea level. Such an event may be dangerous in patients with pneumothorax, pneumoperitoneum, emphysema, and certain gastro-intestinal disorders.

Any of the situations mentioned above can be aggravated by anxiety before or during the flight. In evaluating whether or not a patient can tolerate travel by air, the important factors are: (1) the condition of the patient —whether reduction of oxygen or pressure may be detrimental to him, (2) whether special care, such as oxygen, will be required, (3) the type of airplane, altitude, weather, or duration of flight, (4) what facilities are available in the airplane for the care of patients.

Should Air Travel Be Limited?

Various lists of suggestions have been compiled for the attending physician on air travel for different types of patients—cardiac; patients with respiratory disease, including tuberculosis, pulmonary fibrosis and/or emphysema, asthma, bronchiectasis, pneumonia, lung cancer, and various upper respiratory infections; diabetics, pregnant women; patients with severe anemia, nervous and mental diseases; and, in fact, almost every disease one can think of.

At one time, many limitations were placed on air travel for such patients, but as experience accumulated, particularly during the war when severely wounded men were flown long distances, it became apparent that air travel seldom aggravates the disorder. Many patients use the airlines to reach medical centers.

Airline experience bears out the validity of this judgment. For civilian flights the number of deaths occurring aloft in a 22-year period was found to be very small in comparison to the number of passengers being flown. Actually, only 91 deaths occurred among 135,000,000 passengers, or less than one per million, and these in patients with very serious cardiovascular disease in which it was impossible to attribute the cause of death to physical stimuli encountered in flight.

No Blanket Approval

This does not mean, however, that blanket approval can be given to all to travel by air. There are conditions associated with flight, such as oxygen want, pressure changes, and airsickness, that might be expected to influence adversely patients with certain conditions. Very shortly, a valuable document entitled "Medical Criteria for Passenger Flying" will be published by the Aerospace Medical Association. Until then, suffice it to say that the particular disease and its severity, combined with the ability to increase ventilation, are the most important factors in making an estimate of the altitude tolerance and duration of exposure. »

TABLE A

PHYSICAL CHARACTERISTICS of the STANDARD ATMOSPHERE

Altitude (ft.)	Pressure in Mm. Hg.	Temperature Degrees Fahrenheit	Equivalent O_2 (dry) per cent	Partial Pressure of O_2 mm Hg.
Sea Level	760	59°	20.93	159.0
1000	732.9	55°	20.18	153.3
5000	632.3	41°	17.41	132.3
8000	564.4	31°	15.54	118.1
12,000	483.3	16°	13.31	101.1
15,000	428.8	6°	11.81	89.7
18,000	379.4	−5°	10.45	79.4
25,000	281.9	−30°	7.76	59.0
30,000	225.6	−48°	6.21	47.2

PHOTO CREDITS

Pg. 8—Photo by Claudio Campuzano, reprinted from Scope Weekly, courtesy B. Upjohn Company

Pg. 11—American Airlines

Pg. 15—Cincinnati Convention & Visitors Bureau

Pg. 14—Stanford University

S

■ IF, BY ILL CHANCE, you are laid low by smallpox (and recover), the chances are slim that you will ever again have that disease. Substitute chicken-pox for smallpox and the same holds. In fact, repeat attacks of most diseases caused by viral or bacterial infection are extremely rare.

The reason is that the body reacts to the invasion of the bacteria by creating antibodies specific for the particular strain of bacteria, and these antibodies, circulating in the blood, go into immediate action against the bacteria in the event of a second invasion. Thus, with many diseases, either a first attack or a vaccination provides protection against future attacks.

A notable exception to the antibody-antigen pattern is tuberculosis. Although circulating antibodies can be detected in the blood of tuberculosis patients, there is no evidence that they are related to immunity, and it is a well-known fact that one attack of tuberculosis is not a protection against future attacks. Yet it is known, too, that some degree of immunity against TB can be acquired.

What are the factors responsible for immunity in tuberculosis and what is the mechanism of the defense reaction?

These are questions that have intrigued numerous investigators through the years and have led to many theories, much study, some controversy, and no incontrovertible proof —as yet.

One investigator who believes that the answer will be found in the not-too-distant future and that the facts gleaned from various lines of study will in the end fit together like pieces of a solved puzzle is Sidney Raffel, M.D., head of the department of medical microbiology of Stanford University, Stanford, Calif.

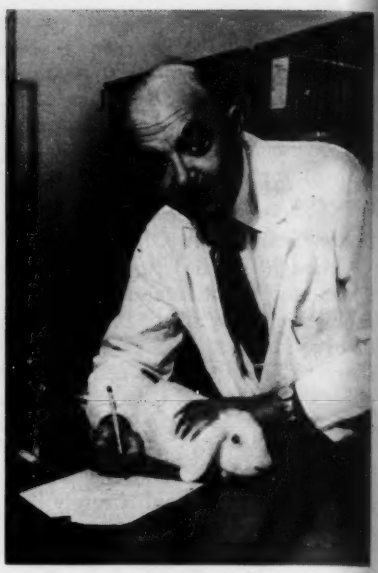
Since 1944 Dr. Raffel has received research grants from the NTA-ATS and also from the California Tuberculosis and Health Association for a series of studies pertaining to allergy and immunity in tuberculosis. The two are not to be confused, although the study of the one cannot be completely separated from the other. There was a time when allergy, or hypersensitivity as evidenced by the reaction to tuberculin, was believed to be the mechanism by which immunity was conferred. The theory was that the inflamation caused by the allergic reaction when tuberculin was injected into an infected subject served as a barrier to the spread of the bacilli. However, this concept was proved untenable by Arnold R. Rich, M.D., Johns Hopkins pathologist.

It was as a student of Dr. Rich, Trudeau medalist of 1960, that Dr. Raffel became interested in hypersensitivity and acquired immunity in tuberculosis. This interest determined the line of research he was to follow in his postgraduate years at Stanford and during a year at Basle, Switzerland, on a Guggenheim fellowship.

Dr. Raffel's primary interest is in finding out *how* the body acquires immunity.

To test the antibody-antigen concept, Dr. Raffel recently subjected to irradiation the entire body of guinea pigs that had been vaccinated with BCG. The X-ray dose suppressed the formation of antibodies as a reaction to the BCG, but the animals, nonetheless, were found to have immunity when subsequently infected with virulent tubercle bacilli. From this experiment, and others, he has reached the conclusion that antibodies have little, if anything, to do with the acquisition of immunity in tuberculosis.

During the course of the experiments in Dr. Raffel's laboratory, a factor has been isolated from the serum of tuberculosis patients that appears to impede the multiplication of tubercle bacilli. This factor is under study from many angles to determine what its role may be in immunity. On the basis of present knowledge, Dr. Raffel is inclined to believe that it does play a role in resistance, but that it is distinct from antibody.



Dr. Sydney Raffel

The fascinating thing about studying immunity in tuberculosis, according to Dr. Raffel, is that the answer may prove to open the door to the prevention not only of tuberculosis but also of other infectious diseases. Furthermore, he believes it may hold the key to why the body rejects tissue grafts. It may be, he conjectures, that the same mechanism put in motion when a foreign substance such as the tubercle bacillus invades the body may also set into motion when an attempt is made to transfer to the body a foreign substance, such as an organ or skin tissue.

Just how the body acts to protect itself against the tubercle bacillus is not yet known. Dr. Raffel believes that the pieces of information being gained from research in different laboratories will help find the answer. As he said at a discussion of the subject last year at the conference of the International Union Against Tuberculosis in Istanbul . . .

"One gains from a perusal of these various lines of evidence the impression that the quest may be nearing its goal; that a further step in one of the directions outlined may convincingly resolve the question."

1961 ANNUAL MEETING
May 21-26—CINCINNATI

At the Museum of Natural History's new quarters, "do it yourself" displays are featured.

CINCINNATI, cross roads of the nation, will be host city to the 1961 NTA Annual Meeting, to be held May 21-26.

Good transportation and central geography have made Cincinnati one of the big ten cities for conventions. Three other times NTA has held its annual meetings there—in 1917, 1934 and 1951.

Not only geography but also Cincinnati's many attractions make it a good place to hold a meeting. There are bright restaurants where the food is out of the ordinary . . . Broadway companies play regularly in this metropolis . . . The Cincinnati Redlegs may be at home . . . One of the leading U.S. art museums is in Eden Park . . . Musical societies provide a variety of concerts . . . And there is a cruise on the Ohio River.

Many will not want to miss Cincinnati's fine medical institutions. These are but a few: Dunham Tuberculosis Hospital, where there is an outstanding surgical division; the Veterans Administration Hospital TB ward; and Children's Hospital, University of Cincinnati, where Dr. Albert B. Sabin developed the live polio virus strains so recently in the news.

Chairman of the 1961 Annual Meeting Committee is John H. Skavlem, M.D., of Cincinnati. Subcommittee chairmen are: Nursing Sessions—Mrs. Margaret B. Dolan, University of North Carolina School of Public Health; Medical Sessions—L. H. Schmidt, Ph.D., Christ Hospital Institute of Medical Research, Cincinnati; Exhibits—Gerald L. Baum, M.D., Cincinnati; Public Health Sessions—Burt C. Sheehan, Middlesex County TB Association, Somerville, Mass.; Local Arrangements Committee—Herman J. Nimitz, M.D., Dunham Hospital, Cincinnati.

The dates, again, are May 21-26. News about the program will appear in the December *Bulletin*; travel and hotel information will follow in the January issue. »

Top: seven railroads come into the Union Terminal. Passenger building is one of 22 structures. Bottom. At the heart of the city are the Tyler-Davidson Fountain and Carew Tower. ▲

▲ Second baseman Billy Martin of the Cincinnati Redlegs puts out Pittsburgh's Dick Groat.

◀ Lobby of Dunham Hospital, the county tuberculosis hospital.

I

P

Mrs. William Bernlohr has been appointed executive secretary of the Delaware County TB and Health Assn., Delaware, Ohio. ***Mrs. Suzy Hopkins,*** former executive, has resigned to complete her education.

Ralph H. Boatman, formerly director of health education, TB Institute of Chicago and Cook County, has resigned to accept the post of professor at the University of North Carolina School of Public Health, Chapel Hill, N.C. ***Mr. Harlan Stricklett,*** formerly health education supervisor, is replacing Mr. Boatman.

Jennie Bianchi has joined the New York TB and Health Assn., New York City, as a public health nurse. ***Mrs. Nancy Clark Hoffa,*** who formerly held the position, has resigned to accompany her husband, Dr. Richard Clark, to Virginia.

Ronald J. Clair, formerly case-finding coordinator of the Oakland County TB Association, Pontiac, Mich., is now executive director of that association, replacing ***A. R. Musson,*** who has retired.

Mrs. Henrietta Hankin is now a full-time staff member of the Queensboro TB and Health Assn., Jamaica, N. Y., as a community organizer. She has been with the association part time since 1957.

Aaron V. Williams has joined the Brooklyn TB and Health Assn., N. Y., as rehabilitation consultant.

Clark Paradise, formerly program director of the Ramsey County TB and Health Assn., St. Paul, Minn., has been appointed Seal campaign director of the Minnesota TB and Health Association, St. Paul.

Mrs. Sally Salisbury is the new Seal campaign director of the Utah TB and Health Assn., Salt Lake City, Utah.

Ronald Stucker is now rehabilitation coordinator at the Dade County TB Assn., Miami, Florida.

Mrs. Charlotte Jones has joined the Maryland TB Association as Christmas Seal Campaign director. ***William Matthews,*** who was with the Maryland association for many years, has accepted a position as director of boating and recreation with the Maryland Department of Tidewater Fisheries.

John W. Wadleigh has been appointed Christmas Seal Campaign director of the New Mexico TB Assn., replacing ***Mrs. Peggy Humphreys,*** who has resigned.

Charles Althafer has joined the Oregon TB and Health Association as director of health education.

Edward Donahue, who is a recent Wayne Fellowship graduate, has joined NTA as an assistant in the Christmas Seal Campaign Division. A graduate of the University of Bridgeport (Conn.), he received his master's degree in health administration in June.

Jim Pearson has joined the California TB & Health Association in the Research and Development Division.

Mrs. Eva Hill is the new Christmas Seal supervisor of the Colorado TB Association.

Dr. Karl F. Meyer, an outstanding authority on animal diseases transmittible to man has been named recipient of the 1960 Howard Taylor Ricketts Memorial Award of the University of Chicago.

W. Findley Raymond, director of public information for the TB Association of Greater New Orleans, has been elected president of the Adult Education Association of Louisiana.

W. W. Wilmore, executive secretary of the Kansas TB & Health Association, has been elected secretary-treasurer of the Health Education Services of the Kansas State Board of Health.

Charle A. Doan, M.D., who was awarded the 1960 American Medical Association Distinguished Service Award, at one time did research on the tubercle bacillus under grants from the NTA. Dr. Doan, whose AMA award was for work in hematology and blood disease, was formerly associated with the late Dr. Florence R. Sabin, Trudeau medalist.

Rene J. Dubos, Ph.D., one of the participants in the Arden House Conference on tuberculosis, was recently named recipient of the $5,000 Passano Award for 1960. The award was in recognition of his research in the use of specific enzymes in biochemistry, the chemotherapy of tuberculosis and his early work in antibiotics.

PRINTED IN U.S.A.

hristmas
ado TB

tanding
ransmit-
ecipient
Ricketts
ersity of

ector of
Associ-
ns, has
e Adult
uisiana.

ecretary
Associa-
cretary-
ducation
oard of

ho was
Medical
Service
arch on
grants
se AMA
natology